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Treatment of Chronic Inflammatory Gingival Enlargement Using Electrosurgery: A Case Report

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Abstract
An individual tooth is aesthetically inseparable from the adjacent gingiva. Successful aesthetic dentistry can be best accomplished when healthy and stable tissues surround the teeth. Gingival enlargement is defined as an increase in the size of gingiva referred as gingival overgrowthwhich is a common feature of gingival diseases. Gingival enlargement can be due to various etiologies. It may be plaque-induced or associated with systemic hormonal disturbances. In this case report, A 65 year old male patient was afflicted with gingival hyperplasia on his teeth due to the accumulation of plaque because of improper oral hygiene maintenance which is the main etiological factor responsible for this inflammatory gingival hyperplasia. After non-surgical therapy, surgical therapy was done using electrosurgery to remove hyperplasia.The patient was successfully treated and recalled every 3 months. Electrosurgery is an application of electrically generated heat energy to tissue to alter it for therapeutic purposes. Electrosurgery has been used in dentistry for many purposes such as gingivectomy, pulpotomy, frenectomy, operculectomy and hemostasis.

Key Words:*Chronic inflammatory enlargement, Gingival disease, Electrosurgery, Gingivectomy*

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I. Introduction

The gingival hyperplasia maybe isolated or uniformly segmental affecting both or one of the jaws and has a diverse etiopathogenesis. Gingival enlargement may be plaque induced or non-plaque induced. Gingiva can be surgically reshaped and recontored for cosmetic, physiological or functional purposes. During the past three decades, a substantial increase in minimally invasive surgery and microvascular surgery prompted greater use of electrosurgery. The gingival hyperplasia with a long standing chronic feature usually consists of fibrotic component which needs to be treated surgically.**[1]**

Gingivectomy can be done using electrosurgical unit. It provides hemostasis and proper contouring of the tissue. Use of electrosurgery also facilitates easy tissue incision accompanied with a strong hemostatic effect. However, it is contraindicated in patients with cardiac pacemaker. Any contact to bone or cementum has to be avoided as irreparable damage is caused. Needle electrode is used for removal of enlarged tissue. Festooning and shaping can be done using ovoid or diamond shaped electrode. Electrode is activated in concise shaving motion making brief contact with the tissues in cut phase. Prolonged contact will result in charring of tissue. A ball electrode is used for control hemorrhage in coagulation phase. Since 1914, Electro Surgery has been used routinelyin various aspects of medicine, including dentistry. Electro Surgery has been defined as the intentional passage of high-frequency waveforms or currents, through the tissues of the body to achieve a controllable surgical effect**.**William

T Bovie was named as the father of electrosurgery.**[2]** By varying the mode of application of this type of current, the clinician can use ES for cutting or coagulating soft tissues. The ES equipment, if used for such procedures, minimizes bleeding and most patients experience very little post-operative pain after the procedure. An electrosurgical unit costs only a small fraction of the price of laser unit and can be used to perform many of the soft tissue surgical procedure, being carried out with laser.

The following advantages of electrocautery were appreciated, where the electrode cuts on its side as well as on its tip, angulated electrode meets the clinical need, cuts are made with ease when the device is set correctly, immediate and consistent hemostasis, the wound was less painful, and the tip is self-disinfecting. Disadvantages of electrocautery includes the requirement of anesthetic agent for cutting, unavoidable burning flesh odor, low tactile sense, does not allow for their use around implants, bone can be damaged, hazardous in

an explosive environment, contraindicated in patients with pacemakers, poor postoperative healing who have undergone irradiation, diabetes or blood dyscrasias.

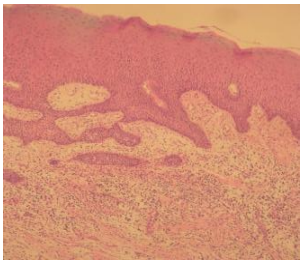
II. Case Report

A 65 year-old male patient reported to the Department of Periodontics, Rajah Muthiah Dental College and Hospital, Annamalai University with a chief complaint of swollen bleeding gums and bad breath for few months. He complained of swelling of the lower gums with bleeding**.** On taking proper dental and medical history it was discovered that patient was found to be systemically healthy and not under any medication but patient had poor oral hygiene maintenance with plaque and calculus accumulation**.**There was a grade III mobile teeth in relation to 32 and gingival enlargement involving labial and lingual surface (Fig A,B,C), the consistency of the lesion was fibroedematous and its IOPA showed boneloss with periapical radiolucency (Fig D). The condition was diagnosed as Chronic periodontitis with grade III gingival enlargement, treatment plan included non-surgical therapy followed by surgical therapy and extraction of poor prognosed teeth.

The initial therapy included oral prophylaxis which aimed at rigorous removal of all the calculus supra and subgingivally to minimize the inflammation**.**Patient was given oral hygiene instruction post scaling. He was advised to use chlorhexidinedigluconate mouthwash twice a day for 14 days. Patient was advised for a full mouth radiograph (OPG) and blood investigations (Complete Blood Count) for surgical intervention.

On recall visit, initial inflammation subsided but gingival enlargement persisted with fibrous consistency. Gingivectomy was planned by using elecrosurgery. Excision of gingival overgrowth was carried out using electrosurgery (Fig E). Electrosurgery unit consists of foot control, adjustable setting of electric power, passive electrode, active electrode handle and attachment. Different types electrode tips used for different purposes are ball tip (for coagulation, to stop bleeding spot), blade tip, needle type (for incision or excision) and loop type (for planning tissue, for lowering the interdental papilla. After excising the gingival tissue using the needle electode, ball tip electrode was used to control bleeding and then the mobile tooth was extracted (Fig F), socket was compressed and the excised tissue was sent for histopathological examination (Fig G). Patient was prescribed antibiotics and analgesics and recalled after one week for review, followed by15 days and one month for postoperative checkup (Fig I).

A.  D.  G. 

B.  C.  H. 

E.  F.  I. 

A) PREOPERATIVE VIEW B) PREOPERATIVE VIEW OF LESION C) PREOPERATIVE VIEW OF LESION (MEASUREMENT) D) IOPA OF 32 E) GINGIVECTOMY USING ELECTROSURGERY F) EXTRACTION OF MOBILE TEETH G) EXTRACTED TOOTH AND EXCISED TISSUEH) HISTOLOGICAL VIEW I) POSTOPERATIVE AFTER 15 DAYS

Microscopic examination revealed hyperparakeratinized stratified squamous epithelium. The underlying dense fibrous connective tissue stroma showed chronic inflammatory cell infiltrate consisting of lymphocytes and plasma cells and a moderate number of endothelial-lined blood vessels suggestive of chronic inflammatory fibrous hyperplasia. A histopathological diagnosis was suggestive of inflammatory fibroepithelial hyperplasia and its consistent with the clinical diagnosis (Fig H).

III. Discussion

Poor oral hygiene is an important risk factor for drug-induced gingival overgrowth. Gingival hyperplasia may be caused due to several multi factorial etiologies such as drug induced enlargement due to (Cyclosporin, phenytoin, nifedipine), hereditary, puberty induced, pregnancy induced, inflammatory component and systemic involvement such as (leukemia, neurofibromatosis) **[3].**

The therapeutic approaches related to gingival enlargement are based on the underlying etiology and the subsequent changes it manifests on the tissues. The prime treatment modalities involve obtaining a detailed medical history and nonsurgical periodontal therapy, followed by surgical excision to retain esthetical, and functional demands.

The therapeutic objectives desired in restorative dentistry include incision (or excision) and coagulation of tissue. Both monopolar and bipolar modes can achieve cutting and coagulation of tissue. The monopolar mode, however, is more effective than bipolar for cutting action and possesses distinct advantages over the bipolar mode for this objective.[4] A wide variety of electrode shapes is available for monopolar cutting than is available in the bipolar mode. Although cutting can be accomplished by the bipolar mode, it is much more inefficient and restrictive in application. Electrosurgery has always had serious limitations in the oral cavity. Some problems included its inability to touch bone or metal, high heat and current spread, the need for a grounding pad, and the fact that it cuts by an advancing spark. These limitations have limited its acceptance by many general dentists and almost a complete avoidance by periodontists and oral surgeons. Regular users of Electrosurgery know from experience, that when Electrosurgery is applied according to principles, predictable and good wound healing can be achieved.

Plaque induced gingival hyperplasia usually begins at gingival margin and shows change in color and contour. Consequently, the sulcular temperature changes too and the quantity of gingival exudate is increased. The gingival bleeds on slight provocation **[4].**

Drug-induced gingival enlargement presents as abnormal growth of the gingiva due to an adverse drug reaction in patients treated with anticonvulsants, immunosuppressants, and calcium channel blockers. **[5].**Drugs causing gingival enlargement include calcium channel blockers like Amlodipine, Diltiazem, Felodipine, Isradipine, Nicardipine, Nifedipine, Nisoldipine, Verapamil, Manidipine, immunosuppressants like tacrolimus and cyclosporine5, anticonvulsants like phenobar-bitone, primidone, and valproic acid, miscellaneous like erythromycin and sertraline, etc. **[6].**Chronic inflammatory gingival enlargement case shows poor oral hygiene as there was more of inflammatory component and there was drastic reduction in enlargement after scaling and root planing andcurettage, and the residual was corrected by internal bevel gingivectomy surgery. Thus, understanding cause and pathogenesis and planning treatment based on it is important**.[7]**

Recurrence after treatment is a most common problem. Recurrence of Chronic inflammatory gingival enlargement: (a) After treatment immediately - incomplete removal of irritants, (b) after healing - inadequate plaque control by the patient most common cause. One of the most important determinants of treatment outcomes is patient compliance. The willingness to perform adequate oral hygiene measures and receive timely periodic recalls and treatment is essential for a successful outcome. Electrosurgery has several applications in almost all branches of dentistry, but this technique is not very widely used. Electrosurgery can never completely replace the scalpel but although Electrosurgery requires more knowledge and skill, the advantages out number and outweighs its disadvantages. If the clinician practices Electrosurgery techniques in the laboratory and applies them clinically according to the principles, clinician will surely find ES to be of immense use in clinical dentistry. This report helps to highlight the importance of patient motivation and patient compliance in treatment planning.

IV. Conclusion

Electrosurgerycan be used as an alternative to conventional surgery. Successful results can be obtained with careful usage and having proper knowledge. Although this surgery in utilization has resulted in new applications, equipment features, problems and solutions, the use of electrosurgery in the field of dentistry has remained relatively unchanged. For the management of such cases, regular professional oral

prophylaxis and patients compliance is necessary.Oral hygiene education supplemented with positive motivation should be started at the initial stages of the treatment strategy to obtain predictable outcomes.

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